



Totality! Predicting the Corona of the 2017 Great American Solar Eclipse

Prediction of the Sun's corona during the August 21, 2017 total solar eclipse. The displayed quantity is a composite volume rendering of the magnetic squashing factor (with radial and sky-plane weightings). The squashing factor is sensitive to non-uniformities in the magnetic field and highlights the inherent complexity of the corona. *Cooper Downs, Zoran Mikic, Predictive Science Inc.*

Spoiler alert! By using state-of-the-art modeling and computational techniques, scientists were able to predict how the Sun's corona would look during the August 21, 2017 total solar eclipse.

The simulation, run on NASA's Pleiades supercomputer, utilized a cutting-edge model for coronal heating and included a novel representation of energized magnetic fields in the low corona. This successful prediction represents one of the largest and most ambitious global corona simulations to date.

Developing and validating models like these is important for scientists to better understand the structure and physics of the solar corona. Such understanding is critical for accurately forecasting the space environment and immense solar storms, which can damage critical infrastructure.



Ronald M. Caplan, Cooper Downs, Predictive Science Inc.

Filtered photograph of the observed August 21, 2017 total solar eclipse. The original image has been rotated and zoomed to approximately align it with the simulation prediction shown in the figure above. *Alson Wong, Riverside Astronomical Society*